BIOLOGICAL EVALUATION
Mountain Pine Beetle in Lodgepole Pine
Evanston Ranger District
Wasatch National Forest 1974

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INTRODUCTION

Mountain pine beetle populations are epidemic on portions of the Wasatch and Ashley National Forests in northern Utah. Areas of heaviest mountain pine beetle activity are in the upper Bear River, Blacks Fork, Weber and Provo River drainages. This report covers only the infestation in the Bear and Blacks Fork River drainages on the Evanston Ranger District.

The Wasatch National Forest has a long history of mountain pine beetle activity. Existing records show almost continuous activity since 1920. The largest and most intensive infestation occurred from 1956 to 1965. During most of that period, more than 736,000 individual trees were treated on approximately 420,000 acres at a cost of $4,317,000. As near as can be determined, the treated area on the North Slope ranged from the Blacks Fork of the Green River, east to Cart Creek on the Ashley National Forest. Some spot treatment of a localized infestation was done in the Stillwater Fork. The current infestation, stretching from the Blacks Fork west to the upper Stillwater, reached epidemic proportions around 1968, possibly earlier, and has been on the increase since.

GENERAL INFORMATION

INSECT: Mountain pine beetle, Dendroctonus ponderosae Hopkins.

HOST TREE: Lodgepole pine, Pinus contorta Dougl.

LOCATION: Evanston Ranger District, Wasatch National Forest, Utah, and private and BLM lands, Wyoming and Utah (Figure 1).

TYPE OF DAMAGE: Killing of lodgepole pine.

EXTENT OF DAMAGE: From West Fork of Blacks Fork, Green River, southwest to Stillwater Fork, upper Bear River.

METHODS

An aerial reconnaissance of the infestation was made during mid-July and every year since the present outbreak began. This year's aerial survey was followed up by an on-the-ground biological evaluation during the period August 6-13. Attack ratio surveys were undertaken along predetermined transects in ten different areas (Figure 1). Affected trees were counted, differentiated as to year of attack (1973 and 1974), and their diameters recorded. Supplemental biological data on brood stage, relative abundance, and condition, as well as the presence and relative abundance of natural enemies, were also taken.

BIOLOGICAL INFORMATION

A resumé of the biological data taken during the ground evaluation survey is shown in Table 1 in the appendix. Generally, these data indicate that, with very few exceptions, the infestation is on the increase. At the time of the ground survey, beetle flight in some areas, particularly at the higher elevations, was not yet complete. It was felt, however, that at least 90 percent of the new attacks had occurred. Additional attacks would increase the ratios, but very slightly.

Brood stages ranged from newly attacking adults to small larvae. However, broods present were relatively plentiful and it was too early for any tangible evidence of established parasites and predators. Considering past experience, it was felt, however, that at this stage of the outbreak, natural enemies will have little effect on the eventual outcome.

Heaviest tree loss has occurred on private and BLM land north and west of Meeks Cabin Reservoir, and on the Forest in the lower reaches of the Bear River drainage, while less damage was observed in the Stillwater Fork.

DISCUSSION

To the east of the present infestation, in lodgepole stands that underwent the previous outbreak, tree losses ranged from 36 percent of trees 4-inch d.b.h. and greater at the lowest elevations to only 2 percent at the higher elevations.[1/]

Although many of these stands were "controlled" at one time or another, it is believed that these efforts had little lasting effectiveness other than to prolong the length of the outbreak.

1/ Amman, Gene D., Bruce H. Baker, and Lawrence E. Stipe. 1973. Lodgepole pine losses to mountain pine beetle related to elevation. USDA For. Serv. Res. Pap. INT-171, 8 p.

During the next few years, tree killing in the established outbreak areas will increase in place and spread to the south into previously beetle-free areas. There is sufficient host material to maintain the infestation at least throughout this decade. Heaviest losses will be in the larger trees at the lower elevations.

The only feasible and effective control alternative at this time is to harvest as many of the infested areas as possible to salvage dead and infested timber that would otherwise be lost, and to establish an orderly harvesting program ahead of the infestation in uninfested but threatened areas. If long term and effective control is desired, the best solution at this time, considering our present knowledge, is to convert these vulnerable stands to a less susceptible state.

Many trees have already been lost in several of the established campgrounds, and many will be lost in the near future. Good protection of selected high-value trees can be obtained by timely application of the chemical Lindane. If this method of protection is desired, we will be glad to provide technical assistance.

RECOMMENDATIONS

1. Salvage as many of the dead and infested trees as possible.

2. Plan future timber sales in large diameter stands in uninfested areas to the south of the present infestation.

3. Treat the most valuable trees in heavily used recreation areas with a preventive spray.

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Area No.	Area Name	No. of Attacks 1974	No. of Attacks 1973	Attack Ratio 1/	Avg. DBH 1974	Avg. DBH 1973	Brood Condition	Trend
1	East Fork Cpgd.	69	158	0.44:1	9.6	9.1	Good	Decreasing
2	Mill City Cr. N.	72	71	1.01:1	9.9	9.3	Good	Static
3	Mill City Cr. S.	34	33	1.03:1	11.6	11.9	Good	Static
4	Dead Man Cr.	51	70	0.73:1	10.8	10.9	Good	Decreasing
5	Stillwater Cpgd.	88	62	1.42:1	10.8	9.9	Good	Increasing
6	Bear River R.S.	131	78	1.68:1	9.9	10.1	Good	Increasing
7	Christmas Meadow	55	61	0.90:1	11.8	10.6	Good	Static
8	Chapman Creek	121	103	1.17:1	9.5	8.8	Good	Increasing
9	Clear Creek	62	51	1.22:1	10.5	10.2	Good	Increasing
10	Sulphur Creek	99	77	1.29:1	10.3	9.5	Good	Increasing

1/ Ratio of new (1974) attacks to old (1973).

Table 1. Mountain pine beetle attack ratios in lodgepole pine, Evanston Ranger District, Wasatch National Forest, 1974